UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/810,638 | 03/29/2004 | Jeffrey Shane Reiter | SEAG-STL3385 | 9583 |

91716 7590 09/23/2010

SEAGATE TECHNOLOGY LLC
C/O Murabito Hao & Barnes LLP
Two North Market Street
Third Floor
San Jose, CA 95113

| EXAMINER | |
|---|---|
| MCDONALD, RODNEY GLENN | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1795 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 09/23/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

officeaction@mhbpatents.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/810,638 | REITER, JEFFREY SHANE | |
| | Examiner | Art Unit | |
| | Rodney G. McDonald | 1795 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 August 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-8,11-14 and 16-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,11-14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 23, 2010 has been entered.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 11-14, 16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zejda (U.S. Pat. 5,228,968) in view of Maeda et al. (U.S. Pat. 5,620,523) and Ando et al. (U.S. Pat. 6,458,253).

Regarding claim 1, Zejda teach an apparatus for treating at least one substrate/workpiece in a plasma. (See Abstract; Figs. 1-4) A chamber 1 defining an interior space. (Column 2 line 50; Figs. 1-4) Mounting component adapted for positioning at least one substrate/workpiece in the interior space of the chamber for receiving treatment in the plasma. (Column 2 lines 61-62; Figs. 1-4; plasma inherent to sputtering see Abstract) A gas supply component for injecting at least one gas into the

interior of the chamber. (Column 3 lines 32-38) An outlet extending into the chamber for injecting gases into the interior space. (Column 3 lines 32-38) The apparatus comprises a spaced apart pair of cathode/target assemblies and mounting components positions at least one substrate/workpiece in the space between the pair of cathode/target assemblies and gas outlet portions positioned between the spaced apart pair of cathode/target assemblies. (Column 2 lines 58-60; Figs. 1-4)

Regarding claim 6, Zejda teach the interior of the chamber is to be maintained at a reduced pressure by a vacuum pump. (Column 2 line 56)

Regarding claims 7, 8, the apparatus is adapted to perform a plasma treatment or process of sputter deposition. (See Abstract)

Regarding claim 11, Zejda teaches a method of treating at least one substrate/workpiece. (See Abstract; Fig. 1-4) Providing a chamber 1 defining an interior space for generating a plasma. (Column 2 line 50; Figs. 1-4) Mounting at least one substrate/workpiece in the interior space of the chamber for receiving treatment in the plasma between a spaced apart pair of cathode/target assemblies. (Column 2 lines 58-62; Figs. 1-4; plasma inherent to sputtering see Abstract) Injecting gas at least one gas into the interior of the chamber between the cathode/targets. (Column 3 lines 32-38) A plasma is generated because sputtering inherently requires it. (See Abstract) An outlet extending into the chamber for injecting gases into the interior space. (Column 3 lines 32-38) The apparatus comprises a spaced apart pair of cathode/target assemblies and mounting means positions at least one substrate/workpiece in the space between the pair of cathode/target assemblies and gas outlet portions positioned between the

spaced apart pair of cathode/target assemblies. (Column 2 lines 58-60; Figs. 1-4) The substrate is sputter coated. (See Abstract)

Regarding claim 12, Zejda teach the interior of the chamber is to be maintained at a reduced pressure by a vacuum pump. (Column 2 line 56)

Regarding claims 13, 14, Zejda teach the apparatus is adapted to perform a plasma treatment or process of sputter deposition. (See Abstract)

Regarding claim 16, Zejda teach coating magnetic disks. (Column 1 lines 57-60)

The differences between Zejda and the present claims is that a component for generating a plasma in the interior space of the chamber is not discussed (Claims 1, 11), an inlet portion extending exteriorly of the chamber is not discussed (Claims 1, 11), a pair of arcuately shaped tubular gas outlet portions is not discussed (Claims 1, 11), a component for applying a bias potential to the gas supply component for suppressing plasma formation at the portion, wherein the component for applying a bias potential is electrically isolated from the component for generating a plasma is not discussed (Claim 1), an electrically insulating sleeve located at an opening in a wall of the chamber between the inlet portion and the outlet portion is not discussed (Claims 1, 11), the electrically insulating sleeve electrically isolates the gas supply component from the chamber and the component for generating the plasma is not discussed (Claims 2, 11), the outlet portion of the gas supply component extends through an electrically insulated opening in a wall of the chamber is not discussed (Claim 3), component for applying the bias potential comprises means for applying a DC , AC, or RF bias potential is not discussed (Claim 4), component for applying the bias potential comprises a component

for applying a selected polarity DC bias potential of up to about 1,000 V is not discussed (Claim 5), applying a bias potential to the gas supply component to suppress plasma formation at the at least one outlet orifice, wherein the gas supply means is electrically isolated from the component for generating a plasma is not discussed (Claim 11), injecting at least one gas into the interior space of the chamber by a component of an electrically isolated gas supply component having an inlet portion extending exteriorly of the chamber and an outlet portion extending into the chamber via an electrically insulated opening in a wall of the chamber is not discussed (Claim 18), applying a DC, AC, or RF bias potential is not discussed (Claim 19) and applying a selected polarity DC bias potential of up to about 1,000V is not discussed (Claim 20).

Regarding the component for generating a plasma in the interior space of the chamber (Claims 1, 11), Zejda discussed above teaches sputtering which inherently require a power supply for generating a plasma to produce sputtering. (See Zejda discussed) If Applicant disputes this Ando et al. shows (82) for generating a plasma in the interior space of a chamber for sputtering. (Column 12 lines 60-65; Column 13 lines 41-43)

Regarding inlet portion extending exteriorly of the chamber (Claims 1,11), Ando et al. teach an inlet portion extending exteriorly of the chamber. (Fig. 7; Column 13 lines 51-56)

Regarding a pair of arcuately shaped tubular gas outlet portions (Claims 1, 11), Zejda teach in Fig. 4 ring shaped gas supply components disposed between spaced apart targets. (See Fig. 4) Maeda et al. teach alternative ways to supply gas to a

plasma chamber. In Figs. 9A and 9B ring shaped gas supply components are used. Alternatively as shown in Figs 8A and 8B arcuate gas supply components can be utilized. (Column 8 lines 64-68; Column 9 lines 1-30)

Regarding the component for applying a bias potential to the gas supply component for suppressing plasma formation at the portion, wherein the component for applying a bias potential is electrically isolated from the component for generating a plasma (Claim 1), Ando et al. teach means (81) for applying a bias potential to the gas supply for suppressing plasma formation at the at least one outlet orifice, wherein the component for applying the bias potential (81) is electrically isolated from the component (82) for generating the plasma. (Fig. 7; Column 12 lines 59-60; Column 13 lines 51-57; Column 16 lines 60-67)

Regarding an electrically insulating sleeve located at an opening in a wall of the chamber between the inlet portion and the outlet portion (Claims 1, 11), Ando et al. teach an electrically insulating sleeve located at an opening in a wall of the chamber between the inlet portion and the outlet portion. (Column 5 lines 13-15; Column 5 lines 31-34; Column 6 lines 45-49)

Regarding the component for electrically isolating the gas supply component from the chamber and the component for generating the plasma (Claims 2, 11), Ando et al. show in Fig. 1A an insulating member 40 for electrically isolating the gas supply components from the chamber and the component for generating the plasma (i.e. target/cathode). (Column 5 lines 13-15; Column 5 lines 31-34; Column 6 lines 45-49)

Regarding the outlet portion of the gas supply components extends through an electrically insulated opening in a wall of the chamber (Claim 3), Ando et al. show the outlet portion of the gas supply components extending through an electrically insulating opening in a wall of the chamber. (Column 5 lines 13-15; Column 5 lines 31-34; Column 6 lines 45-49)

Regarding the components for applying the bias potential comprises components for applying a DC , AC, or RF bias potential (Claim 4), Ando et al. teach the components for applying the bias potential comprises components for applying a DC bias potential. (Column 12 lines 59)

Regarding the component for applying the bias potential comprises components for applying a selected polarity DC bias potential of up to about 1,000 V (Claim 5), Ando et al. teach the bias potential can be from +50V to -50V. (Column 23 lines 9-10)

Regarding applying a bias potential to the gas supply component to suppress plasma formation at the at least one outlet orifice, wherein the gas supply component is electrically isolated from the component for generating a plasma (Claim 11), Ando et al. teach (81) for applying a bias potential to the gas supply for suppressing plasma formation at the at least one outlet orifice, wherein the component for applying the bias potential (81) is electrically isolated from the component (82) for generating the plasma. (Fig. 7; Column 12 lines 59-60; Column 13 lines 51-57; Column 16 lines 60-67)

Regarding injecting at least one gas into the interior space of the chamber by components of an electrically isolated gas supply component having an inlet portion extending exteriorly of the chamber and an outlet portion extending into the chamber via

an electrically insulated opening in a wall of the chamber (Claim 18), Ando et al. teach (81) for applying a bias potential to the gas supply component for suppressing plasma formation at the at least one outlet orifice, wherein the component for applying the bias potential (81) is electrically isolated from the component (82) for generating the plasma. (Fig. 7; Column 12 lines 59-60; Column 13 lines 51-57; Column 16 lines 60-67) Ando et al. show in Fig. 1A an insulating member 40 for electrically isolating the gas supply component from the chamber and the component for generating the plasma (i.e. target/cathode). (Column 5 lines 13-15; Column 5 lines 31-34; Column 6 lines 45-49)

Regarding applying a DC, AC, or RF bias potential (Claim 19), Ando et al. teach applying a DC bias potential. (Column 12 lines 59)

Regarding applying a selected polarity DC bias potential of up to about 1,000V (Claim 20), Ando et al. teach the bias potential can be from +50V to -50V. (Column 23 lines 9-10)

The motivation for utilizing arcuate gas supply of Maeda et al. is that it allows for improving film uniformity. (Column 2 lines 16-17)

The motivation for utilizing the features of Ando et al. is that it allows for producing a thin film that suffers little damage from negative ions, positive ions, and electrons. (Column 2 lines 62-65)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Zejda with the features of Maeda et al. and Ando et al. is that it allows for depositing a film with uniformity and little damage.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zejda in view of Maeda et al. and Ando et al. as applied to claims 1-8, 11-14, 16, 18-20 above, and further in view of Suzuki et al. (U.S. Pat. 6,627,253).

The difference not yet discussed is reactive sputtering of a ferromagnetic target material in an oxygen-containing plasma to deposit an oxygen-containing ferromagnetic layer on each surface of the at least one substrate/workpiece. (Claim 17)

Regarding claim 17, Suzuki et al. teach sputtering a ferromagnetic target material in an oxygen-containing plasma to deposit an oxygen containing ferromagnetic layer on each surface of the at least one substrate/workpiece. (Column 8 lines 58-67; Column 9 lines 1-18)

The motivation for utilizing the features of Suzuki et al. is that it allows for reducing the media noise of the magnetic layer. (Column 7 lines 48-49)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Suzuki et al. because it allows for reducing the media noise of the magnetic layer.

***Response to Arguments***

In response to the argument that Zejda in view of Maeda et al. and Ando et al. do not teach a gas supply means that includes "an electrically insulating sleeve located at an opening in a wall of the chamber between the inlet portion and the outlet portion", it is argued that Ando et al. show in Fig. 1A an insulating member 40 for electrically isolating the gas supply components from the chamber and the component for generating the plasma (i.e. target/cathode). The electrically insulating member 40 is an

electrically insulating sleeve located at an opening in a wall of the chamber between the inlet portion and the outlet portion. (Column 5 lines 13-15; Column 5 lines 31-34; Column 6 lines 45-49; Fig. 1A)

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
September 17, 2010